Missouri Department of Natural Resources

PUBLIC NOTICE

DRAFT MISSOURI STATE OPERATING PERMIT

DATE: October 22, 2004

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources (MDNR), as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed permit conditions are invited to submit them in writing to the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, ATTN: Peter Goode, P.E., Chief, NPDES Permits and Engineering Section. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The MDNR may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by November 22, 2004 or received in our office by 5:00 p.m. on November 25, 2004. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits and other information including copies of applicable regulations are available for inspection and copying at DNR's website, http://www.dnr.mo.gov/wpscd/wpcp/homewpcp.htm , or at the Department of Natural Resources, Water Protection Program, 205 Jefferson Street, P.O. Box 176, Jefferson City, Missouri 65102, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: October 22, 2004
Permit Number: MO-0101729
Southeast Regional Office

FACILITY NAME AND ADDRESS	NAME AND ADDRESS OF OWNER
BIOKYOWA, Inc./Kyowa Foods, Inc. 5469 Nash Road Cape Girardeau, MO 63702	Kyowa Hakko Kogyo, Ltd. P.O. Box 1550 Cape Girardeau, MO 63702
RECEIVING STREAM & LEGAL DESCRIPTION	**TYPE OF DISCHARGE**
See Below	Industrial, Wastewater Discharge, Land Application of Residuals, reissuance

Outfall #001 - Mississippi River (Mississippi River and Central Tributaries Basin) Sec. 20, T30N, R14E, Cape Girardeau County;
Outfall #002 - Headwaters Diversion Channel (Headwater Diversion Channel Basin)
Sec. 28, T30N, R13E, Cape Girardeau County;
Outfall #003 - Land Application of Residuals on 9,900.5 acres of farmland in Scott, New Madrid, and Mississippi Counties;
Outfall #004 - Groundwater Monitoring Wells at land application sites.

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.:	MO-0101729
Owner:	Kyowa Hakko Kogyo, Ltd.
Address:	P.O. Box 1550, Cape Girardeau, MO 63702
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	BIOKYOWA, Inc./Kyowa Foods, Inc.
Address:	5469 Nash Road, Cape Girardeau, MO 63702
Legal Description:	See page 2
Receiving Stream:	See page 2
First Classified Stream and ID:	See page 2
USGS Basin & Sub-watershed No.:	See page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date

Jim Hull, Director of Staff, Clean Water Commission

OUTFALL NUMBER	PURPOSE OF DISCHARGE	LEGAL DESCRIPTION LATITUDE/LONGITUDE	RECEIVING STREAM, 1ST CLASSIFIED STREAM/NUMBER, USGS\SUB-WATERSHED NUMBER, DESIGNATED USAGE	SAMPLING LOCATIONS
001	Discharge Of Treated Process Wastewater To Diffuser In Mississippi River	NW ¼, SE ¼, SEC. 20, T30N, R14E, CAPE Girardeau County +3715110/-08930470	Mississippi River (P) Mississippi River (P)/01707 07140105/210001 IRR, LWW, AQL, BTG, DWS, IND	At The Wastewater Treatment Plant Prior To Entry Into The Pipe Line Leading To The Mississippi
002	Discharge Of Non-Contact Cooling Water And Stormwater	NE ¼, NE ¼, SEC. 28, T30N, R13E, CAPE Girardeau County +3714441--08936081	Headwaters Diversion Channel (P) Headwater Diversion Channel (P)/02196 07140107-060003 LWW, AQL, BTG, WBC	At The Discharge Point Into The Diversion Channel

FACILITY DESCRIPTION

Outfall #001 - Industry - Process Water: Treatment facilities consist of a flow equalization basin where pH adjustment takes place, primary clarification, two complete activated sludge processes operated in parallel (aeration basins and final clarifiers), and filtration. Sludge is thickened with dissolved air flotation process. See Outfall #003 for sludge disposal. Design flow is 1.7 MGD. Actual flow is 1.37 MGD. Discharge is to the Mississippi River.

Sampling Location - At the wastewater treatment plant prior to entry into the pipe line leading to the Mississippi.

Outfall #002 - Industry - No treatment is provided. Non contact cooling water/stormwater. Design flow is 8.7 MGD. Actual flow is 4.4 MGD.

Sampling Location - At the discharge point into the diversion channel.

Outfalls #001 & #002

Instream Monitoring – Exact locations to be approved by the Department.

Outfall # 003 - Land Application System Design:

Facility type: No-discharge Storage and Land Application System for year-round residuals production. Residuals (sludge) removed during wastewater treatment under Outfall #001 are stored and then land applied. Residuals are land applied at nutrient fertilization rates onto agricultural sites. Application rate is based on land application of residuals using a Nutrient loading rate (Nitrogen and Phosphorus) and pollutant loading rate. The receiving stream watersheds for the application sites are gaining streams.

Four (4) residuals storage tanks located at the wastewater treatment plant have storage capacity of 1,462,092 gallons for 75 days storage of residuals production.

Design residuals production after dewatering is 16,070 gallons/day and 5,785,550 gallons per year at 10% solids (2,467 dry tons/year).

Design Application rates/acre/year are approximately 1-2 dry tons/acre or 2,344 - 4,688 gallons/acre. Actual rates are based on nutrient management plan using current testing and crops grown for each field.

Land Application site(s) are at total of 9,900.5 acres located in Cape Girardeau, Scott, New Madrid and Mississippi Counties as listed in the permit application. The permittee owns 1,108.4 acres and another 8,792.1 acres are under spreading agreement with Stallings Brothers Farms Shelton Farms, Hall Farms and Vince Draper Farms.

Application site(s) have field slopes less than 8.0 percent.

Vegetation grown on the application sites are hay crops and row crops.

Application equipment type is one 3,500 gallon tank truck with subsurface injectors and three trailer nurse tanks of 5,700 gallons each.

Outfall #004 – Groundwater Monitoring Wells at land application sites. Monitoring wells are designated as the following well numbers:

Headlight Farm Irrigation Wells: BIO-1A, BIO-2A, BIO-3A, BIO-4A;
Green Farm Irrigation Well: BIO-10A
Headquarters Farm Wells: Irrigation Well = IW/ST-1A, Home Well = HW/ST-1A; and
Fox Meadow Farm Irrigation Wells: North = N/ST-2A, South = S/ST-2A.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PERMIT NUMBER MO-0101729

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001 - Process wastewater						
Flow	MGD	*		*	daily	24 hr. total
Biochemical Oxygen Demand$_5$	lbs/day	3,543		1,842	once/week	24 hr. comp.
	mg/L	*		*	once/week	24 hr. comp.
Chemical Oxygen Demand	lbs/day	17,170		8,926	once/week	24 hr. comp.
	mg/L	*		*	once/week	24 hr. comp.
Total Suspended Solids	lbs/day	8,388		2,816	once/week	24 hr. comp.
	mg/L	*		*	once/week	24 hr. comp.
pH - Units	SU	**		**	once/week	grab
Ammonia as N	lbs/day	8,218		4,887	once/week	grab
	mg/L	*		*	once/week	grab
Nitrate as N	lbs/day	*		*	twice/week	calculated
	mg/L	*		*	twice/week	grab
Diffuser pressure reading (Note 1)	PSI	*	*	*	once/day	reading from gauge
Influent to Treatment Plant						
Biochemical Oxygen Demand$_5$	mg/L	*		*	once/week	24 hr. comp.
	lbs/day	*		*	once/week	24 hr. comp.
Total Suspended Solids	mg/L	*		*	once/week	24 hr. comp.
	lbs/day	*		*	once/week	24 hr. comp.
Chemical Oxygen Demand	mg/l	*		*	once/week	24 hr. comp.
	lbs/day	*		*	once/week	24 hr. comp.

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____.

Whole Effluent Toxicity (WET) Test	% Survival	(Special Conditions #8)	twice/year 24 hr. comp.

MONITORING REPORTS SHALL BE SUBMITTED BIANNUALLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #002 - Cooling water and stormwater						
Flow	MGD	*		*	daily	24 hr. total
Upstream Temperature	°F	*		*	once/month	grab
Downstream Temperature	°F	*		*	once/month	grab
Net Temperature Difference	°F	*		*	once/month	grab
pH - Units	SU	**		**	once/month	grab
Oil and Grease	mg/L	15		10	once/month	grab
Nitrate as N	mg/L	*		*	once/month	grab
	lb/day	*		*	once/month	calculated
Ammonia as N	mg/L	*		*	once/month	grab
	lb/day	*		*	once/month	calculated

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #001 & #002 - Instream Monitoring***						
Ammonia as N	mg/L	10		10	twice/year	grab
Nitrate as N	*	*		*	twice/year	grab
pH - Units	SU	*		*	twice/year	grab
MONITORING REPORTS SHALL BE SUBMITTED WITH WET TEST RESULTS; THE FIRST REPORT IS DUE _____.						
Outfall #004 - Groundwater Monitoring Wells at land application sites (Note: See Special Conditions for additional land application requirements)						
Groundwater depth	feet	*			once/quarter****	*****
Nitrate/Nitrite as N	mg/L	10			once/quarter****	grab
pH - Units	SU	*			once/quarter****	grab
Total Dissolved Solids	mg/L	*			once/quarter****	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.

** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.

*** Samples for instream monitoring of outfall 001 shall be collected at the edge of the Zone of Initial Dilution as described in the "March 2004 Diffuser Performance and Instream Monitoring Report"-March 2004. Samples for instream monitoring for both outfalls shall be collected on the same day that samples are collected for Whole Effluent Toxicity testing.

**** Sample each well once per quarter during the months of March, May, July, and September.

***** Depth of water table below ground surface.

Note 1 – Pressure readings for diffuser shall be recorded daily and reported with Discharge Monitoring Reports.

C. SPECIAL CONDITIONS

1. All outfalls must be clearly marked in the field.

2. For all outfalls, report as no-discharge when a discharge does not occur from an outfall during the monitoring period.

3. Discharge shall be limited so as not to violate Missouri Department of Natural Resources Water Quality Standards 10 CSR 20-7.031(4)(D) and 10 CSR 20-7.031(4)(A)(6) regarding temperature elevation of the receiving stream. In lieu of monitoring, discharger may certify that no discharges of heated water have occurred which could cause violation of these standards.

4. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
   (d) Address hypoxia issues in the Gulf of Mexico,
   (e) Address continuous electronic monitoring of ammonia and other pollutants if permit limits are violated or if the diffuser fails,
   (f) Incorporate new or modified effluent limitations or other conditions, if the result of a toxicity test or other information indicates changes are necessary to assure compliance with Water Quality Standards.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

5. The permittee shall have a continuous pressure recording device installed on the discharge pipeline to the river diffuser. This device shall be located at the wastewater treatment plant control room so the operator can determine the normal operating pressure range of the diffuser system. Abnormalities such as a broken line, or disrupted diffuser would be noted quickly for repair and reporting purposes, and will also sound an alarm. All detected abnormalities shall be reported with pressure readings as noted in Table A.

C. SPECIAL CONDITIONS (continued)

6. Water Quality Standards

(a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.

(b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:

(1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;

(2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;

(3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;

(4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;

(5) There shall be no significant human health hazard from incidental contact with the water;

(6) There shall be no acute toxicity to livestock or wildlife watering;

(7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;

(8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Industrial Residuals - General

(a) Residuals Responsibility. The responsibility for residuals management lies with the Permittee, and none of that responsibility can be delegated to other parties. The term residuals in this permit is meant to include both the thickened sludge from the diffused air flotation units and the amount of CMS from the evaporators that is applied to land units identified in the current Residuals Management Plan and permit application Form R. Records of the amount of CMS that is produced and sold as a by-product for other uses must be submitted upon request of MDNR.

(b) Adding Application Sites. A permit modification is required to add new sites acquired, by purchase, lease, agreement or contract, for land application of residuals. Permittee should submit a revised application Form A, mailing addresses for first down stream land owners of each site, geologic report, topographic maps and other pertinent information for the proposed sites.

(c) Construction of Residuals Storage. If additional residuals storage facilities become necessary, a construction permit shall be obtained before construction of such facilities begins, and the facilities shall be built in accordance with the appropriate design guides.

(d) Testing requirements. Testing will be performed on the residuals as follows: daily for pH and total solids content; monthly for nutrients including organic nitrogen as N, ammonia nitrogen as N, nitrate nitrogen as N, total phosphorus as P and total potassium as K; monthly for heavy metals content; and yearly for toxicants.

(e) Geologic Evaluations. A geological evaluation will be made on each application site by a Geologist registered in the State of Missouri. All limiting geological features shall be identified.

C. SPECIAL CONDITIONS (continued)

7. Industrial Residuals – General (continued)

(f) Topographic Site Maps. Site maps of land application areas shall be submitted to the Regional Office and Water Protection Program Central Office. The maps shall show topographic contours, drainage courses, sink holes, ponds, wells, buffer areas, property boundary, legal description and other pertinent features. The maps should use a base map such as the USGS 7.5 minute quad sheets or equivalent at a scale of at least one inch equals 1000 feet or 2000 feet (1" = 1000' to 2000'). In addition, an overall location map should be included showing the locations of all sites using a smaller scale such as 1" = 2 miles as is used on the county maps in the Missouri Conservation Atlas by the Missouri Department of Conservation.

(g) Land Application Rate**.** Permittee shall operate the land application system in accordance with the design parameters listed in the Facility Description and Special Conditions sections of this permit. Application rates shall be based on the Plant Available Nitrogen procedures and Residuals Management Plan.

(h) Saturated/Frozen Conditions. There shall be no land application during frozen, snow covered or saturated soil conditions. There shall be no land application when there is observation by operator of an imminent or impending rainfall event. When 0.2 inch of precipitation has occurred, an on-site visual investigation of the field's soil moisture condition, followed by analytical testing of the soils, will be made to determine whether land application of residuals can occur. The visual and analytical soil test procedures will be reviewed and approved by the department as part of the Operation and Maintenance Manual.

(i) Buffer Zones. There shall be no land application within 300 feet of any down gradient pond, lake, sinkhole, losing stream or water supply withdrawal and within 150 feet of dwelling. For surface application, there shall be no land application within 100 feet of gaining streams (Class P and C classified streams listed in Water Quality Standard rule under 10 CSR 20-7.031); 50 feet of wet weather gaining streams and tributaries (unclassified streams); or 50 feet of the property line. For subsurface injection, buffer zones may be reduced to 25 feet from gaining streams (classified and unclassified).

(j) Storm Water Runoff. There shall be no contaminants discharged from the land application sites by storm water that cause violation of the Water Quality Standards rules for general criteria and specific criteria under 10 CSR 20-7.031.

(k) Metals Loading Limitations. Annual loading of trace metals shall not exceed 10% of the maximum cumulative limits for each metal as specified in University of Missouri publication WQ 425, revised 4/95 (or later addition if published). When the cumulative limit is reached, residuals addition will be halted. Each time residuals are spread on a site, the remaining metals capacity of the site will be calculated.

(l) Log Sheets. Log sheets shall be prepared and kept for each application site showing amounts of residuals applied per acre, dates of application, nutrients applied, and crop yields.

(m) Soil Testing Requirements. Testing will be performed on the soils of each application site every year for nitrate nitrogen, every three years for pH, lime requirement, cation exchange capacity, percent organic matter, and available soil test phosphorus (Bray 1P test).

(n) Annual Report. An annual report shall be submitted with the last regular report of each calendar year, which is due by January 28th of the following year. The annual report shall summarize the residuals management operations for requirements listed in the permit and Residuals Management Plan. This includes: who removed the sludge, the number of gallons or quantity of residuals removed, the percent solids of the residuals, the amount of residuals applied per acre, nutrients applied per acre, crop yields, the dates and locations of the applications, the cumulative amount of residuals applied per acre, the testing results for residuals, soils and groundwater wells, and daily precipitation amounts. Report forms for the annual report shall be approved by the department and included in the Residuals Management Plan.

C. SPECIAL CONDITIONS (continued)

8. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
Outfall #001	0.23%†	twice/yearly	24 hr. comp.	July & December

a) Test Schedule and Follow-Up Requirements

(1) Perform a multiple-dilution test in the months and at the frequency specified above. If the effluent passes the test, do not repeat the test until the next test period.
Submit test results along with complete copies of the test reports as received from the laboratory within 30 calendar days of availability to the WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102.

(2) If the effluent fails the test, a second multiple dilution test shall be performed within 30 calendar days, and biweekly thereafter, until one of the following conditions are met:

(a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
(b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

(3) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

(4) Additionally, the following shall apply upon failure of the third test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact WPP, Water Quality Monitoring and Assessment Section to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPP within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

(5) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(6) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

C. SPECIAL CONDITIONS (continued)

(7) Any test result indicating statistically significant mortality at the AEC is a violation of the permit narrative requirements for the protection of aquatic life. Such a result also constitutes violation of RSMO 644.051.1(1). Any such failing test shall be reported to WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.

(8) When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

(9) Submit a concise summary of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.

(2) To pass a multiple-dilution test:

(a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; or,
(b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

(c) Test Conditions

(1) Test Type: Acute Static non-renewal

(2) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.

(3) Test period: 96hrs at AEC and each additional concentration required for analysis using the Multiple Dilution method.

(4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.

(5) Multiple-dilution tests will be run with:
(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(6) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR,the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration:	96 hr
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	96 hr
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

Date of Public Notice: October 22, 2004

NATIONAL PULLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FACT SHEET

This Fact Sheet explains the applicable regulations, rationale for development of this permit and the public participation process.

NPDES PERMIT NUMBER: MO-0101729

FACILITY NAME: Biokyowa, Inc.

OWNER NAME: Kyowa Hakko Kotyo

LOCATION: NW, Sec. 20, T30N, R14E
NE, Sec. 28, T30N, R13E

COUNTY: Cape Girardeau

RECEIVING STREAM: MISSISSIPPI RIVER, CLASS (P) BASIN 53, (07140107-060003)

FACILITY CONTACT PERSON: Bruce Blankenship
TELEPHONE: 573-335-4849

FACILITY DESCRIPTION AND RATIONALE:

This permit will be issued for a period of 5 years.

BioKyowa, Inc. is a manufacturer of amino acids. These amino acids are utilized by many different industries such as animal feed, health food, and other chemical manufacturers that take the product as a "crude grade" and further refine it. Currently there are two manufacturing facilities located at the plant site, which is located in Cape Girardeau, Missouri. Each facility manufactures four (4) amino acids. The process for manufacturing all the different amino acids is basically the same, as are the raw materials used. The amino acids currently being produced are as follows:

Plant 1	Plant 2
Tryptophan	Arginine
Threonine	Glutamine
Valine	Histidine
Isoleucine	Ornithine

The manufacturing process is based on the fermentation of sugars by a pure bacteria culture. Each amino acid has its own specific bacteria culture. After completion of the fermentation process extraction processes are used to remove the amino acid from the fermented broth. The amino acid is then taken from a liquid to a crystal and dried. Once it is in the dried state it is packaged for distribution.

Wastewater to the treatment plant (outfall 001) is from tank cleaning, the utilities section, and the extraction process. Outfall 002 is composed of cooling water, barometric condenser water and stormwater which is collected in our stormwater basin.

There are currently two (2) by-products produced at this facility.

One is nitrogen cake that is produced in the extraction section of both plants. This nitrogen cake is made up of carbon and diatomaceous earth, which is used to filter the color from our products. It has nitrogen value as a weak fertilizer and is marketed as such. All nitrogen cakes have MDNR exemptions and are registered fertilizers with MOAG.

The second by-product is biosolid from the wastewater treatment facility. The settled solids from the clarifiers are treated by DAF (dissolved air flotation) and then land applied using a subsurface injector. Land application of the biosolids is done as per the Sludge Management Program in accordance with the NPDES permit.

On 6/22/04, Biokyowa, Inc., applied for a renewal of permit MO-0101729 to continue the operation of the wastewater treatment plant which treats process wastewater only from their production plant in the Cape Girardeau Industrial Park. The Standard Industrial Code (SIC) for this industry is 2048, prepared feeds and feed ingredients. The permit provides for 4 outfalls. Treated process wastewater and cooling water from Outfall 001 is pumped through a pipeline to the Mississippi River approximately 4.5 miles away in the NW ¼, SE ¼, Sec. 20, T30N, R14E, Cape Girardeau County. Treatment consists of a flow equalization basin, pH adjustment, trickling filters, intermediate clarification, aeration, final clarification, filters, and final pH adjustment. Flow from Outfall 002 (non-contact cooling water and stormwater) is piped into the Headwaters Diversion Channel in the NE ¼, NE ¼, Sec. 28, T30N, R13E. Domestic wastewater is discharged to the Cape Girardeau Industrial Park wastewater collection system. Outfall 003 is land application system for sludges removed from wastewater. CMS, which can be feed additive for a certified fertilizer, is removed by evaporators, and the sold as a by-product or land applied. Other sludges are land applied at nitrogen fertilizer rates onto 9,900 acres of farmland located in Cape Girardeau, Scott, New Madrid, and Mississippi Counties. Outfall 004 is ground water monitoring wells at land application sites.

This facility also holds an Underground Injection Control permit (UIC) UI-0000017 for injection of oxygenated degassed water into the aquifer below the plant site to precondition the water they use.

The Mississippi River is a classified stream with the following beneficial uses: irrigation, livestock and wildlife watering, protection of warm water aquatic life, boating and canoeing, drinking water supply, and industrial. The Headwater Diversion Channel is a classified stream with the following beneficial uses: livestock and wildlife watering, protection of warm aquatic life, whole body contact recreation, boating and canoeing.

The proposed permit has been drafted with final limits to reflect the installation of a diffuser discharge line into the Mississippi River in the NW ¼, SE 1/3, Sec 20, T30N, R14E, Cape Girardeau County, at River Reach 07140107-00-00. The new diffuser will discharge the water entering the transmission line from Outfall 001.

TECHNOLOGY BASED EFFLUENT LIMITATIONS

Outfall 001-Process Wastewater

Regulations promulgated at 40 CFR §122.44(a) require technology based effluent limitations to be placed in NPDES permits based on National effluent limitations guidelines and standards, Best Professional Judgement (BPJ), in or combination of the two. Discharge from Outfall 001 was subject to effluent limitations given in 40 CFR Part 439 Subpart A, while it was classified as being a pharmaceutical production facility. This facility has been determined to be a non-categorical industry and thus technological limits must be developed on a Best Professional Judgement (BPJ) basis.

Actual final permit limits were calculated, based on long term averages and statistical multipliers characterizing effluent variability, using the permit derivation methodology of the Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001). The coefficient of variation used for Ammonia, BOD5, COD and TSS were based on the assumption that monitoring for all perameters will be conducted once per week. A 99th percentile probability basis was used as the statistical assumption. The formulas and tables on page 103 of the above mentioned document were used to arrive at the calculated limits shown on the table below.

The suggested interim limits were based on maintaining the status quo of current discharge rates. The suggested monthly average and daily maximum values are based on current 99th percentile of discharge levels.

Recommended BPJ Permit Limits in units of #/day

PARAMETER	MONTHLY AVERAGE lb/day	DAILY MAXIMUM lb/day
Ammonia	4887	8218
BOD5	1842	3543
COD	8926	17170
TSS	2816	8388

They will be measured at the location of the effluent pump at the wastewater treatment plant prior to entering the pipeline (outfall 001).

Arsenic, chloride, cyanide and sulfate have been monitored for several years and the data shows they are not a threat to aquatic life and therefore have no water quality concerns to the Mississippi River.

WHOLE-EEFFLUENT TOXICITY (WET) TESTING: A semi-annual WET test shall be required. Final WET limits: With a diffuser in place, WET tests shall be performed at 10%, 1%, 0.5%, and 0.23% effluent. If proper diffuser operation is confirmed, the "acceptable effluent concentration" (AEC) shall be 0.23% effluent. (Without diffuser deployment, the AEC would be 10% effluent.)

Outfall 002-Cooling Water

Current Monitoring is acceptable

Outfall 003-Land Application System

See permit for discussion

Outfall 004-Ground Water Monitoring Wells at Land Application Sites

See permit for discussion

CALCULATIONS

LAT= Long Term Average, as given in permit renewal application dated 6/22/04
MDL= Maximum Daily Limit
AML= Average Monthly Limit

COD

MDL= LTA * 2.27 =
7564 * 2.27= 17,170.28 lb/day

AML= LTA * 1.18 =
7564 * 1.18 = 8925.52 lb/day

TSS

MDL= LTA * 4.23 =
1983 * 4.23 = 8388.09 lb/day

AML= LTA * 1.42 =
1983 * 1.42 = 2815.86 lb/day

NH3

MDL= LTA * 1.9=4325kg * 1.9=8217.5 lb/day

AML= LTA * 1.13=4325 * 1.13= 4887.25 lb/day

BOD

MDL= LTA * 2.27= 1561 kg * 2.27= 3543.47 lb/day

AML= LTA * 1.18= 1561 kg * 1.18= 1841.98 lb/day